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| 09/739,952 | 12/18/2000 | Junichi Rekimoto | 112857-251 | 4829 |

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EXAMINER

CHUONG, TRUC T

| ART UNIT | PAPER NUMBER |
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2179

DATE MAILED: 03/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/739,952

Applicant(s)

REKIMOTO, JUNICHI

Examiner

Truc T Chuong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 15-28 and 30-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-28 and 30-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to the response, filed 10/08/04.
2. Claims 1-13, 15-28, and 30-35 are pending in this application. In communication, claims 1, 6, 7, 9, 10, 12, 17, 22, 26, 27, 28, 30, and 31 are independent claims. This action is made final.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.

Claim Rejections - 35 USC § 102

4. Claims 1, 4, 5-7, 9, 10, 12, 15, 16, 22, 24, 25, 26-28, and 30 are rejected under 35 U.S.C. 102(e) as being anticipate by Kuzunuki et al. (U.S. Patent No. 5,917,490).

As to claim 1, Kuzunuki teaches an information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space (display 101, col. 6 lines 14-32, block 400, col. 6 lines 44-58, and fig. 1);

a display means for displaying an image on said operation surfaces (e.g., col. 6 lines 14-32, projectors 105 and 107, col. 7 lines 11-29, and fig. 2);

an imaging means for picking up an image of said operation surfaces (e.g., col. 2 lines 41-51, overhead camera 300 to pick up actual images, col. 6 lines 1-12, and figs. 1-2);

a stationary environment type computer arranged in said information space (e.g., col. 6 lines 1-32, lines 44-58, and figs. 1-2); and

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one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof (a barcode is assigned to an objects, col. 21 lines 20-26, lines 42-58);

said environmental type computer being adapted to execute (a program which is executed by the information processing unit, col. 19 lines 41-65);

a processing operation of recognizing the identification information and the position information of each of said physical objects in said visual marker (e.g., col. 21 lines 20-58);

a processing operation of recognizing the digital object dropped to a site on the surface of each of said physical objects (e.g., col. 7 lines 46-65 and col. 14 lines 6-9); and

a processing operation of forming link information for linking the digital object to the dropped site on the surface for each of said physical objects (e.g., col. 3 lines 44-52, link between physical objects and electronically stored information, col. 19 lines 36-54).

As to claim 4, Kusunuki teaches the information input/output system according to claim 1, wherein

said imaging means can identify the position indicated by an optical pointer for indicating a specific position by irradiating a beam of light with a predetermined wavelength (using infrared light, col. 21 lines 20-26); and

the user is allowed to indicate a position in said information space by means of coordinates and the optical pointer (a barcode reader, col. 21 lines 20-26).

As to claim 5, Kusunuki teaches the information input/output system according to claim 1, wherein said environment type computer executes a processing operation of calling the linked digital object and/or displaying the digital object to the user in response to a user operation

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applied to the site of forming the link information on the surface of each of the physical objects on the basis of the image picked up by said imaging means (e.g., col. 3 lines 44-52 and col. 19 lines 41-65).

As to claims 6-7, they are similar in scope to claim 1 above; therefore, rejected under similar rationale.

As to claim 9, Kusunoki teaches an information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space; a display means for displaying an image on said operation surfaces; an imaging means for picking up an image of said operation surfaces; a stationary environment type computer arranged in said information space; and one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof (note the rejection of claim 1 above);

at least one of said physical objects being a virtual camera having a virtual imaging direction as specified by the position information contained in the visual marker (e.g., the facsimile direction to be placed within a given distance, col. 2 line 66-col. 3 line 11).

As to claim 10, Kusunoki teaches the information input/output system according to claim 9, wherein

said environmental type computer is adapted to execute (e.g., col. 19 lines 41-65);

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a processing operation of recognizing/identifying said virtual camera and identifying the position information and the virtual imaging direction (a video camera 6 mounted above a desk surface 2 for picking up physical documents, col. 6 lines 1-7, and fig. 1);

a processing operation of generating a virtual picked up image according to the position information and the virtual imaging direction (e.g., col. 2 line 66-col. 3 line 11, and col. 10 line 56-col. 11 line 27); and

a processing operation of displaying the virtual picked up image to the user (figs. 6A-8B).

As to claim 12, Kusunuki teaches an information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space; a display means for displaying an image on said operation surfaces; an imaging means for picking up an image of said operation surfaces; a stationary environment type computer arranged in said information space; one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof (note the rejection of claim 1 above); and

an optical pointer adapted to point a specific position by irradiating a beam of light with a predetermined wavelength (using infrared light, col. 21 lines 20-26);

said imaging means being capable of identifying the position pointed by said optical pointer (a barcode reader, col. 21 lines 20-26).

As to claim 13, Kusunuki teaches the information input/output system according to claim 12, wherein

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said environment image type computer executes on the basis of the picked up by said imaging means (e.g., col. 19 lines 41-65);

a processing operation of recognizing the user operation on said operation surfaces, using said optical pointer (a barcode reader, col. 21 lines 20-26); and

a processing operation of controlling the display of the digital object by said display means according to the result of the recognition (e.g., col. 21 lines 20-58).

As to claim 15, Kuzunuki teaches an information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space; a display means for displaying an image on said operation surfaces; an imaging means for picking up an image of said operation surfaces; a stationary environment type computer arranged in said information space; one or more than one portable computers capable of exchanging digital objects with other computers; one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof (note the rejection of claim 12 above); and

a portable ID recognition device adapted to recognize the visual marker on the surface of each of said physical objects and being capable of holding or releasing the recognized identification information (e.g., col. 21 lines 20-58).

As to claim 16, Kuzunuki teaches the information input/output system according to claim 15, wherein

said environment type computer executes (e.g., col. 19 lines 41-65);

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a processing operation of obtaining a digital object corresponding to the held identification information in response to the holding operation of said ID recognition device (e.g., col. 21 lines 20-58); and

processing operation of transferring a digital object corresponding to the held identification information to a nearby physical object in response to the releasing operation of said ID recognition device (e.g., col. 21 lines 20-58).

As to claim 22, it is individually similar in scope to claim 1 above; therefore, rejected under similar rationale.

As to claim 24, it is individually similar in scope to claim 4 above; therefore, rejected under similar rationale.

As to claim 25, Kusunuki teaches the information input/output system according to claim 22, further comprising:

a step of calling the linked digital object and/or displaying the digital object to the user in response to a user operation applied to the site of forming the link information on the surface of each of the physical objects (e.g., col. 3 lines 44-52, link between physical objects and electronically stored information, col. 19 lines 36-54).

As to claim 26, it is individually similar in scope to claim 7 above; therefore, rejected under similar rationale.

As to claim 27, it is individually similar in scope to claim 1 above; therefore, rejected under similar rationale.

As to claim 28, it is individually similar in scope to claim 13 above; therefore, rejected under similar rationale.

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As to claim 30, it is individually similar in scope to claim 16 above; therefore, rejected under similar rationale.

Claim Rejections - 35 USC § 103

5. Claim 2, 3, 8, 11, 17-21, 23, and 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuzunuki et al. (U.S. Patent No. 5,917,490) in view of Pierre Wellner ("The Digital Desk Calculator," Proceedings of ACM Symposium on User Interface Software and Technology (UIST '91), 11-13 Nov. 1991).

As to claim 2, Kuzunuki teaches the information input/output system according to claim 1, wherein at least one of said physical objects is capable of being moved in said information space and exchanging digital objects with others (note the rejection of claim 1 above); however, Kuzunuki does not teach that the physical object is a portable computer capable of being moved in said information space and exchanging digital objects with other computers. An electronic object (physical object) of Wellner clearly discloses concept of controlling/interacting with the electronic object by scanning, and then projecting it back on an operating interface (see page 30 column 1-2). Moreover, Wellner's invention is not only limited that the electronic object is a DigitalDesk Calculator but also meant the same concept of using the electronic object as mentioned above can be applied on any regular PC if it gets scanned and projected on the operating interface ("the DigitalDesk Calculator is an example that illustrates how merging these two worlds can improve the usability of a very simple and well-established application," sic, see Conclusion on page 32). It would have been obvious at the time of the invention that a person with ordinary skill in the art would want to have the system allows the user to interact with the

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electrical object of Wellner in the environment of Kuzunuki to share computer functionality to the physical objects and environment while allowing users to continue interacting with the objects as before (column 1, page 32).

As to claims 3 and 23, they are similar in scope to claim 2 above; therefore, rejected under similar rationale.

As to claim 8, it is similar in scope to claim 2 above; therefore, rejected under similar rationale.

As to claim 11, it is similar in scope to claim 2 above; therefore, rejected under similar rationale.

As to claim 17, Kuzunuki in view of Wellner teaches an information input/output system to be used for user operations relating to an object in an information space realized by expanding a digital space of a computer into the real world, said system comprising:

one or more than one operation surfaces arranged in said information space; a display means for displaying an image on said operation surfaces; an imaging means for picking up an image of said operation surfaces; a stationary environment type computer arranged in said information space; one or more than one portable computers capable of exchanging digital objects with other computers; and one or more than one physical objects mounted on said operation surfaces and containing a visually identifiable visual marker on the surface thereof (note the rejections of claims 2 and 12 above);

said environment type computer being adapted to allow mouse/cursor operations on said portable computers to extend to said operation surfaces and display a rubber band as visual

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feedback (actual object handling, col. 9 lines 6-29) according to the area on said operation surfaces as defined by means of said mouse/cursor (note the rejection of claim 2 above).

As to claim 18, it is similar in scope to claim 17 above; therefore, rejected under similar rationale.

As to claim 19, Kusunuki teaches the information input/output system according to claim 17, wherein another object can apply a process or a method it possesses to the rubber-banded original digital object in response to an action of said original object of being dropped on said another object (actual object handling, col. 9 lines 6-29, and figs. 6A-8B).

As to claim 20, Kusunuki teaches the information input/output system according to claim 19, wherein said another object is a physical object possessing a process or a method for printing a document (printers, col. 15 lines 1-10).

As to claim 21, Kusunuki teaches the information input/output system according to claim 19, wherein said another object is a name card possessing a process or a method for mailing a document to the mail address corresponding to the name on it (e.g., col. 8 lines 15-31, and fig. 3A).

As to claim 31, it is individually similar in scope to claim 17 above; therefore, rejected under similar rationale.

As to claim 32, it is individually similar in scope to claim 18 above; therefore, rejected under similar rationale.

As to claim 33, it is individually similar in scope to claim 19 above; therefore, rejected under similar rationale.

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As to claim 34, it is individually similar in scope to claim 20 above; therefore, rejected under similar rationale.

As to claim 35, it is individually similar in scope to claim 21 above; therefore, rejected under similar rationale.

Response to Arguments

6. Applicant's arguments filed in the communication have been fully considered but they are not persuasive.

Applicants have argued and Examiner does not agree with the following reasons:

a. Kuzunuki does not teach or suggest moving image on a display screen such as a computer screen from the computer screen to a physical object such as a tabletop or a wall of room.

Kuzunuki clearly teaches the image monitored by overhead camera 300 is fetched into image input I/F 406, then stored in memory 402. Data in memory 402 is processed by CPU 401 and the result is output from projectors 105 and 107 by image output I/F1 408 or image output I/F2 409 as an image to prove that the actual image can be picked/selected by the user and then projected back on the different location on the screen by using the projector (e.g., col. 7 lines 31-35).

b. Kuzunuki does not teach a processing operation of recognizing the digital object dropped to a site on a surface of each of the physical objects and a processing operation of forming link information linking the digital object to the drop site on the surface of each of the physical objects.

Kusunuki clearly teaches the environment in which an image object can be handled in a sense of direct touch and the environment in which actual objects can be used as man-machine interface parts are established (e.g., col. 7 lines 43-57), and transferring of the object to be displayed by a facsimile is explained in FIG. 8. Also in FIG. 8 (a), the facsimile transfer operation is judged as the one-handed operation as in FIG. 6. Here, the facsimile transmission destination is assumed to have been defined in advance. As in FIG. 7, when an image object is moved to facsimile part 112, image object 104 is highlighted to notify the operator of the reception (sic, col. 10 lines 32-44). It clearly shows that the digital object can be dropped to the other interface and having the similar functions as the original.

c. Kusunuki does not teach the physical object is a portable computer capable of being moved in the information space in exchanging digital objects with other computers.

Kusunuki in view of Pierre Wellner clearly teaches (claim 2) the electronic object (physical object) of Wellner clearly discloses concept of controlling/interacting with the electronic object by scanning, and then projecting it back on an operating interface (see page 30 column 1-2). Moreover, Wellner's invention is not only limited that the electronic object is a DigitalDesk Calculator but also meant the same concept of using the electronic object as mentioned above can be applied on any regular PC if it gets scanned and projected on the operating interface ("the DigitalDesk Calculator is an example that illustrates how merging these two worlds can improve the usability of a very simple and well-established application," sic, see Conclusion on page 32). It would have been obvious at the time of the invention that a person with ordinary skill in the art would want

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to have the system allows the user to interact with the electrical object of Wellner in the environment of Kuzunuki to share computer functionality to the physical objects and environment while allowing users to continue interacting with the objects as before (column 1, page 32).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Truc T Chuong whose telephone number is 571-272-4134. The examiner can normally be reached on M-Th and alternate Fridays 8:30 AM - 5:00 PM.

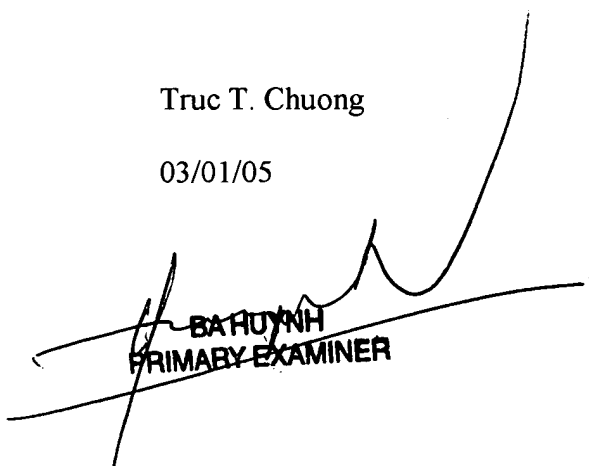
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather R. Herndon can be reached on 571-272-4136. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Truc T. Chuong

03/01/05


BAHUYNH
PRIMARY EXAMINER